User manual

CTX 300

Analogic Gas Detector

Part Number: NP300GB
Revision: K.2
→06/2015

OLDHAM
The Fixed Gas Detection Experts

Juli 2015

All information provided in this document is accurate to the best of our knowledge.

As a result of continuous research and development, the specifications of this product may be changed without prior notice.

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Contents

Chapter 1 | General Information

User Manual

The instructions given in this manual must be read thoroughly before installation and start-up, particularly those concerning the points related to the safety of the end-user. This user manual must be made available to every person involved in the activation, use, maintenance, and repair of the unit. The information, technical data, and diagrams contained in this manual are based on the information that is available at a given time. In case of doubt, contact *Oldham* for additional information.

The aim of this manual is to supply simple and accurate information to the user. *Oldham* cannot be held liable for any misinterpretations in the reading of this manual. In spite of our efforts to produce an error-free manual, it may nonetheless contain some unintentional technical inaccuracies.

In the client's interest, *Oldham* reserves the right to modify the technical characteristics of its equipment to increase their performance without prior notice. The present instructions and their content are the inalienable property of *Oldham*.

Symbols used

Icon	Significance
	This symbol indicates useful additional information.
	This symbol indicates: This equipment must be connected to ground.
	This symbol indicates: Protective earth terminal. A cable of the adequate diameter must be connected to ground and to the terminal having this symbol.

This symbol indicates:
You must refer to the instructions.

This symbol indicates:
Warning! In the present mode of use, failure to adhere to the instructions preceded by this symbol can result in a risk of electric shock and/or death.

European Union (and EEA) only. This symbol indicates that this product must not be discarded with household waste, as per the EEA directive (2002/96/EC) and your own national regulations.

This product must be disposed of at a collection point that is reserved for this purpose, for example, an official site for the collection of electrical and electronic equipment (EEE) in view of their recycling, or a point of exchange for authorized products that is accessible when you acquire a new product of the same type.

Any deviation as regards these recommendations for the disposal of this type of waste can have negative effects on the environment and public health, as these electric and electronic products generally contain substances that can be dangerous. Your full cooperation in the proper disposal of this product promotes a better use of natural resources.

Safety instructions

Labels intended to remind you of the principal precautions of use have been placed on the unit in the form of pictograms. These labels are considered an integral part of the unit. If a label falls off or becomes illegible, please ensure it is replaced. The significance of the labels is detailed below.

The installation and electrical connections must be carried out by qualified personnel according to the instructions of the manufacturer and the standards of the competent authorities.
Failure to adhere to the instructions can have serious consequences on the safety of persons. Please be extremely rigorous as regards electricity and assembly (coupling, network connections).

Important information

The modification of the material and the use of parts of an unspecified origin shall entail the cancellation of any form of warranty.

The use of the unit has been projected for the applications specified in the technical characteristics. Exceeding the indicated values cannot in any case be authorized.

Liability limits

Neither *Oldham* nor any other associated company under any circumstances can be held liable for any damage, including, without limitations, damages for loss or interruption of manufacture, loss of information, defect of the *MX 43* control unit, injuries, loss of time, financial or material loss, or any direct or indirect consequence of loss occurring in the context of the use or impossibility of use of the product, even in the event that *Oldham* has been informed of such damage.

Chapter 2 | Introduction

General Information

CTX300 gas detectors are designed to measure toxic gases or vapors and oxygen. With robust materials, a specifically-adapted design, appropriate accessories, stainless bolts and a polyamide case (IP54), *CTX 300* detectors are designed to withstand the roughest conditions.

Figure 1: overview of a *CTX 300* with display (left) and without display (right).

CTX300 CO_2 versions

In the case of a CTX 300 for the CO2 detection, this manual can only be used for devices delivered before July 2015.

P/N : 6514879
P/N : 6514880
P/N : 6514881
P/N : 6514882

Figure 2: CTX 300 CO2 detector delivered before July 2015

P/N : 6314124

Figure 3: CTX 300 CO2 detector delivered since July 2015

Composition

Sensor type	CTX 300			
	Toxic	**Oxygen**	**Semi-conductor**	**CO_2**[1]
Gases detected	Common toxic gases detected.	Oxygen.	- Combustible gas. - Solvents. - Some Freons.	CO_2.
Detection method	Electrochemical sensors (1).	Electrochemical sensor.	Semiconductor sensor.	Infrared absorption.
Type of sensor pack	Pre-calibrated removable sensor pack (2).	Pre-calibrated removable sensor pack: 0-30% scale or 0-100% volume.	Removable sensor pack, not pre-calibrated.	Removable sensor pack Infrared column, not pre-calibrated.
Options	With display.	With display.		
Certification	None.	None	None	None

(1) Specific to each gas.
(2) Choice between several scales.

[1] CTX 300 CO2 detector delivered before July 2015

Chapter 3 | Installation and connection

Installing the detectors

Layout

While the measuring sensor is always located on the underside of the detector, several factors determine where the detector should be located:

- If the gas being measured is lighter than the air, place the detector near the ceiling.
- If the gas is heavier than the air (CO_2 and Freons, for example) place the detector close to the floor.
- Near offtake points.
- Generally, in locations where gas may accumulate, taking into consideration both:
  - The effects of temperature;
  - The outside winds direction.

Determining the best sensor location

Factors to consider when determining the best placement for the detector are:

- Potential sources for vapor and gas emissions.
- Characteristics of gases and vapors (density).
- Air circulation:
  - Inside: mechanical or natural ventilation.
  - Outside: wind direction and velocity.
- Effects of temperature.
- Local constraints (air flow, water splash, etc.).

Detectors should always be located in an easily accessible location for maintenance purposes.

Special accessories may be necessary to protect the equipment against any liquid projectiles, dust, direct sunlight or low temperatures in the area.

Mechanical installation

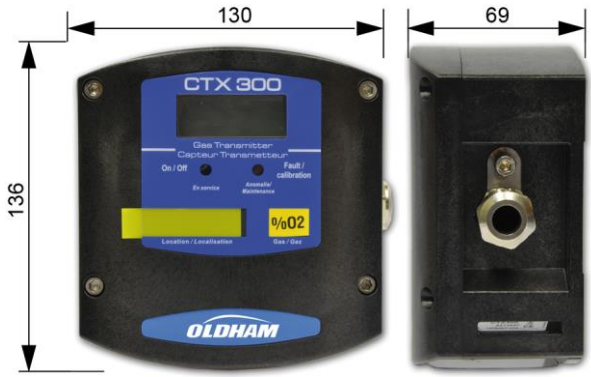


Figure 4: overall dimensions of the CTX 300.

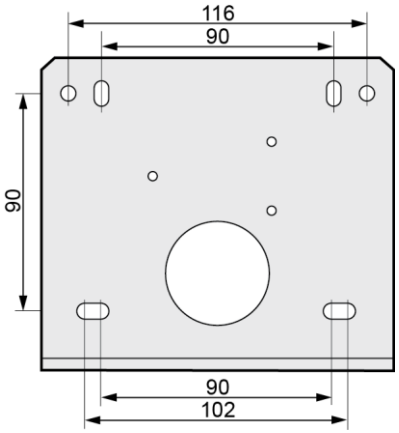


Figure 5: drilling diagram for wall mounting (view of the side flatten onto the ceiling).

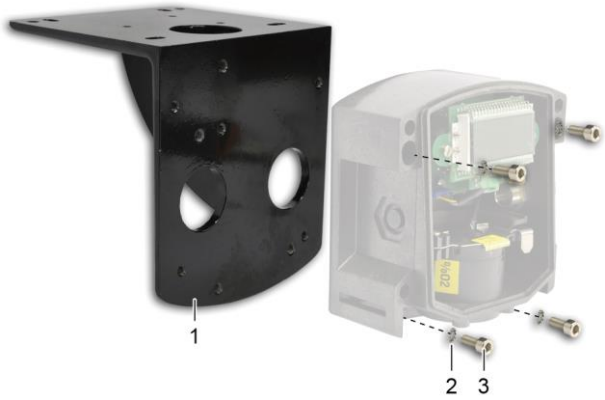


Figure 6: ceiling mounting with a brace. The fixing drawing is identical to this of the wall mount.

Ref.	Qty	Description	Code	Material
1	1	Brace	6132380	Stainless
2	4	Washer A25 ACCD	6905518	Stainless
3	4	Screw CHC LI2	6902218	Stainless

Electrical connections

Wiring specifications

If needed, consult the grounding instructions for *Oldham* instruments and related connection materials in Annex 1.

Connections for the various types of sensors

Wire	CTX 300 (TOX/OX) with display	CTX 300 (TOX/OX) without display	CTX 300 SC/CO_2 without display
Output signal	4-20 mA	4-20 mA	4-20 mA
Active wires	3	2	3
Cable entry	1 x 6-11 mm	1 x 6-11 mm	1 x 6-11 mm

Connection of a 3-wire sensor to an Oldham control unit

Wire	Terminal number
(+) V DC power supply:	3
(-) V DC power supply (masse 0 V):	2
Output signal:	1

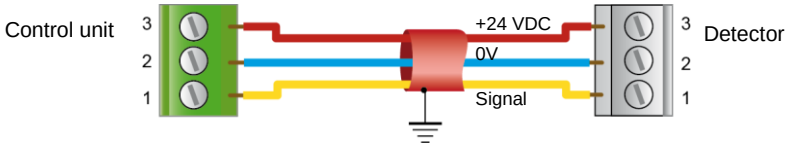


Figure 7: connection of a 3-wire sensor to an Oldham control unit.

Connection of a 2-wire sensor to an Oldham control unit

Wire	Terminal number
(+) V DC power supply:	3
Output signal:	1

Both wires are the 4-20 mA 2-wire loop.

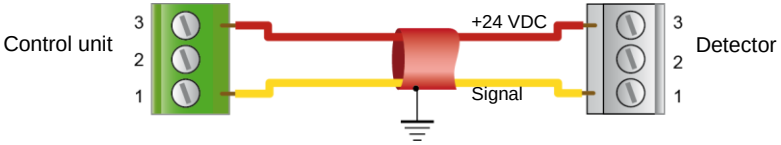


Figure 8: connection of a 2-wire sensor to an Oldham control unit.

Connection of a 3-wire CTX300 sensor to a non-OLDHAM control unit with an internal power supply

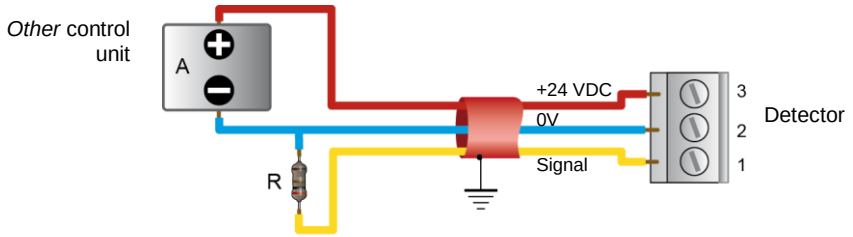


Figure 9: Connection of a 3-wire CTX300 sensor to a non-OLDHAM control unit.

(R) Maximal load = 200 Ω.
(A) Power supply 15 ≤ Vcc ≤ 32.
18 ≤ Vcc ≤ 30 for CO_2 sensor.
I max = 130 mA.

Connection of a 2-wire 4-20mA sensor to a non-Oldham control unit and to an internal power supply

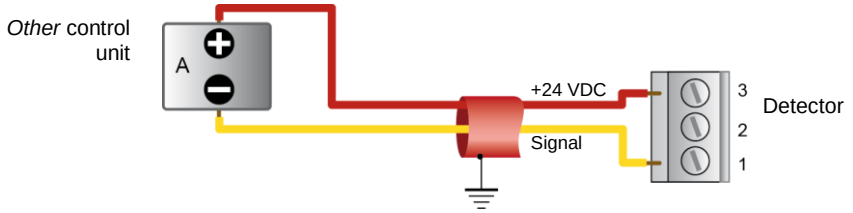


Figure 10: Connection of a 2-wire 4-20mA sensor to a non-Oldham control unit.

(A) Power supply 15< VCC<32V. I max = 30 mA.

Operating mode

CTX300 with display

- Remove the 4 screws (ref. 1).
- Remove the cover (ref. 2).

Figure 11

- Completely remove the screw (ref. 4).
- Unscrew the screw a few turns (ref. 3).

Figure 12

- Turn the display circuit as shown (ref. 5).
- Connect the cable (ref. 6) to the connector. Refer to paragraph *Connections for the various types of sensors* on page 15.
- Return the display circuit to its original position and replace the cover.

Figure 13

CTX 300 without display

- Unscrew the 4 screws (ref. 1).
- Remove the cover (rep. 2).
- Proceed to wire the sensor according to the terminal location.

Figure 14

Chapter 4 | Powering up and use

Powering up

- The sensor turns on when connected to a power supply.
- If the sensor has a display, the green LED will be lit (ref. 2) and a value will appear on the display screen (ref. 1).

Figure 15

In case of a problem, verify that the maintenance switch (ref. 1), located on the main circuit, is in the *MES* (measure) position.

Figure 16: CTX 300 circuit board.

Figure 17: CTX 300 SC main circuit board.

Figure 18: CTX 300 CO_2 main circuit board. This card does is not equipped with a *MES-CAL* switch.

4-20 mA analog output

For *CTX 300* sensors, except for the CO_2 sensor, the 4-20 mA output current is proportional to the gas level.

Notes:

- The CO_2 sensor can be equipped with a linearization board.
- *MX 15* and *MX 32* control units that integrate with the linearization of the CO_2 sensor are available upon request.
- The *MX 62* integrates with the linearization of CO_2 sensors.

The various states of the 4-20 mA output are:

- $\leq$ 1 mA to indicate a fault.
- = 2 mA in *Calibration* position, except for the CO_2 sensor that does not have a calibration function.
- Between 4 and 20 mA for measurement values.
- ≥ 20 mA if levels exceed measurement range.

Chapter 5 | Maintenance

The adjustment operations in this paragraph are reserved for authorized, trained personnel because they may compromise detection reliability.

Gas detectors are safety devices. OLDHAM recommends the regular testing of fixed gas detection installations. This type of test consists of injecting the calibration gas into the detector at a sufficient concentration to activate the pre-set alarms. It is to be understood that this test is in no way a replacement for a detector calibration.

The frequency of gas tests depends on the industrial application where the detector is in use. Frequent inspections should be made in the months following the commissioning of the installation, and should then become more widely spaced provided that no significant deviation is observed. If a detector should fail to react in contact with the gas, calibration is essential. The frequency of calibrations shall be appropriate according to the results of the tests (humidity, temperature, dust, etc.); however, it must not exceed one year.

The general manager should put safety procedures in place on-site. OLDHAM cannot be held responsible for their enforcement.

Calibration

Recommendations

Calibration consists of adjusting the zero of the clean air sensor and adjusting sensitivity with a test gas. Adjustments are made at the sensor level.

Equipment needed to calibrate the detector correctly:

- Flexible plastic tubing (Figure 19, ref. 2).
- Manometer and regulator valve for the compressed gas cylinders (rep. 3).
- 0 to 60 l/h flow meter (if the cylinder is not equipped with one).
- Calibration pipe (ref. 1), which may vary depending on the nature of the gas (see pages 39 and following).
- Test gas cylinder (ref. 4).

Figure 19: sensor calibration assembly.

Zero adjustment should be performed in a gas and vapor free area. If this is not possible, synthetic bottled air can be injected at a rate of 60 l/h.

Use a bottle of test gas to adjust sensor sensitivity (concentration close to the alarm threshold or corresponding to 30% of the measurement range at a minimum). The recommended rate is 60 l/h.
Note: when dealing with dangerous gases, you MUST consult a specialized *Oldham* technician or use another sensor pack recently pre-calibrated at a factory.

The detector should be calibrated using the intended flow-rate. The actual concentration of gas may be underestimated if the detector was calibrated with too high of a flow rate.

CTX 300 calibration

1st case: *CTX 300* with display (excluding O_2)

- The sensor is operating: the green light (ref. 1) is lit and the display screen shows the measurement level.

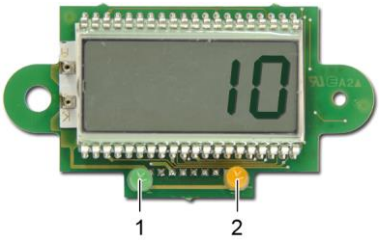


Figure 20

- Flip the maintenance switch (ref. 1) into the *CAL* (calibration) position: the yellow light (Figure 20, ref. 2) will be lit and the sensor will send a 2 mA current to the control unit (*Maintenance* mode).
- Verify that the sensor is located in a clean-air environment. If not, inject synthetic air at a flow rate of 30 l/h.

Figure 21

- Wait for the measurement to stabilize (displayed on screen) and adjust the zero by using the ZERO potentiometer located on the sensor pack (ref. 2).
- Inject the recommended calibration gas at a flow rate of 30 l/h.
- Wait for the measurement to stabilize.
- Adjust the sensitivity by using the sensitivity potentiometer located on the sensor pack (rep. 1).
- Stop injecting the calibration gas.
- Remove the gas injection pipe, then wait and verify that the signal returns to zero. Repeat procedure if it does not.

Figure 22

- Flip the maintenance switch (rep. 1) into the *MES* (measure) position. The yellow light will turn off (Figure 20, rep. 2).
- Calibration is complete.

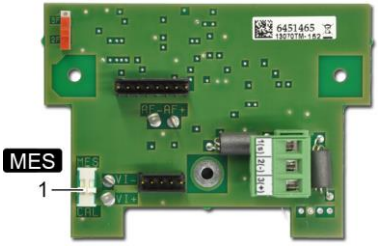


Figure 23

2nd case: *CTX 300* without display (except for O_2, SC and $C0_2$)

- The sensor is operating.

- Flip the maintenance switch (ref. 1) into the *CAL* (calibration) position: the sensor will send a 2 mA current to the control unit (*Maintenance* mode).
- Verify that the sensor is located in a clean-air environment. Use the calibration kit and follow all recommendations.

Figure 24

- Connect a voltmeter to the AF+ and AF- terminals (caliber mV/DC).

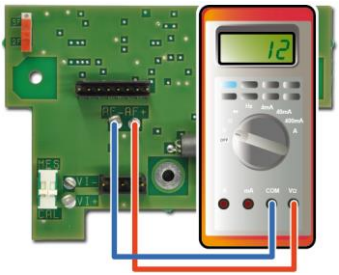


Figure 25

- Wait for the signal to stabilize and adjust the *zero* by using the ZERO potentiometer located on the sensor pack (Figure 26, ref. 2). The output signal should be 0 mV.
- Now inject the recommended test gas at a flow rate of 30 l/h. Use the calibration kit and follow all recommendations.
- Wait until the signal has stabilized.
- Read the mV value on the voltmeter (Figure 25), with the full scale at 1600 mV. Calculate the value to be read as a function of your test gas.

Figure 26

- Adjust the displayed value using the potentiometer (Figure 26, rep.1).
  Example
  - *CO sensor.*
  - *Scale 0-300 ppm.*
  - *Standard gas concentration: 100 ppm.*
  - *Reading: 533 mV.*
- Shut off the calibration gas injection.
- Withdraw the gas injection pipe.
- Then wait and check that the scale has returned to zero. Otherwise, repeat the entire procedure.
- Switch the maintenance on/off switch to the *MES* (measure) position (ref. 1).

Figure 27

CTX 300 calibration for O2

This sensor is an *Oxygen* type.

1st case: *CTX 300* O2 with display

- See paragraph *1st case: CTX 300 with display*, on page 24. Proceed only with adjusting sensitivity (rep. 1) by injection of test gas.

Figure 28

2nd case: *CTX 300* O2 without display screen nor LED

- See paragraph *2nd case: CTX 300 without display* on page 26. Proceed only with adjusting sensitivity (rep. 1) by injection of test gas.

  Signal value mV:
  - 1600 mV for full scale, means 30 % O_2.
  - 1115 mV for 20.9 % O_2.
  - 0 mV for 0% O_2.

Figure 29

*Note: the signal sent from the CTX300 (toxic or oxygen) sensor to the control unit can be measured on the main circuit by connecting a millivoltmeter to the pins designed for this purpose (*Figure 30*).*
- 400 mV corresponds to 4 mA.
- 2000 mV corresponds to 20 mA.

Figure 30

CTX 300 calibration (for Semiconductor)

This is a *Semiconductor* type sensor.

- Flip the switch (rep. 1) into the *CAL* position.

Figure 31

- Ensure that the sensor is in clean air, otherwise inject synthetic air into it using the calibration kit and referring to the recommendations below.
  Important: to correctly calibrate a sensor equipped with a semi-conductor cell, use of a humidifier kit (code 6335919) is MANDATORY.

  Using the humidifier kit

  - Lift the lid (ref. A) and, using a washbottle, moisten the filter, without saturating it, with distilled water
  - Replace the lid and check that all parts are properly assembled and that the assembly is fully airtight.
  - Adjust the flow rate to 60 l/h and wait 10 minutes until the humidifier is fully purged.
  - Apply the gas introduction pipe (ref. C) to the nose of the sensor and wait at least five minutes for the measurement to stabilize.
    Note: the sensor must be powered for at least two hours before any adjustment can be made.

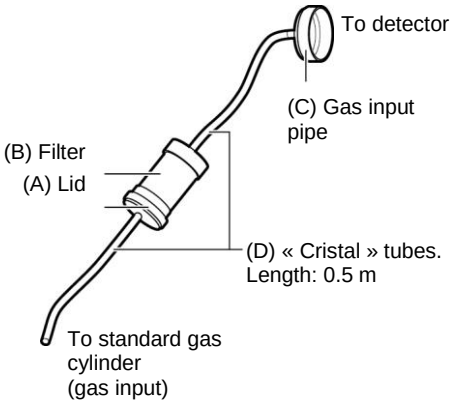


Figure 32: the humidifier kit.

- Connect a voltmeter as indicated and adjust, using potentiometer p5 (ref. 1). The output signal must be equal to 880 mV.
- Next, inject the calibration gas at a flow rate of 30 l/h (refer to paragraph *Indications for calibrating the CTX 300 SC*, on page 53).
- Wait for the signal to stabilize and adjust the signal with the sensitivity potentiometer p6 (ref. 2).

  The output signal should be:

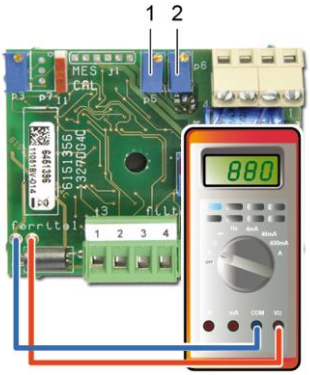


Figure 33

$$U = 880\ mV + \frac{3520\ mV \times \text{Cal gas concentration}}{\text{Sensor measurement range}}$$

Example

Sensor measure (% of full range)	Output signal (mV)
0	880
50	2 640
100	4 400

- Stop injecting the calibration gas.
- Verify that the reading returns to zero (880 mV). If it does not, repeat the entire procedure.
- Calibration is complete.
- Flip the switch (ref. 1) into the *MES* (Measure) position.

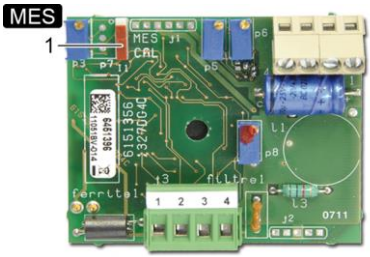


Figure 34

CTX 300 CO_2 calibration[1]

This is a *Carbone dioxide* type sensor.

- Warning: the sensor should be turned on for 15 minutes before adjustments are made. The following text describes the steps necessary to adjust the transmitter (first calibration).
- Adjustment: if the current loop of the output signal has an impedance of 500 ohms, the power supply should never fall below 23 V DC.

- Inject nitrogen at a rate of 30 l/h.
- On the X1 terminal board, place an ammeter between terminals 1 (+) and 2 (-).
- With the potentiometer *Z*, adjust the current to 4 mA.
- With the ammeter still connected, inject the test gas at a rate of 60 l/h.
- Adjust the sensitivity with the potentiometer S. Refer to the paragraph *Calibration curves*, on page 32 for sensors without linearization cards.
- If this fails, flip the J2 jumper and begin again.

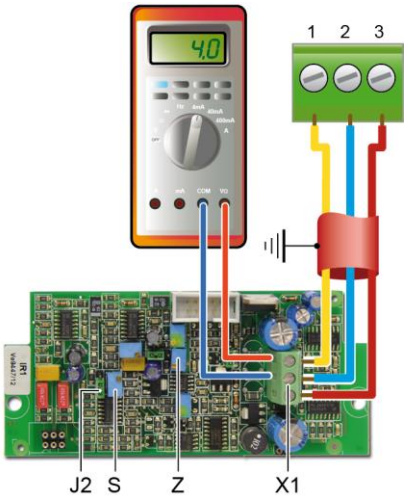


Figure 35

[1] CTX 300 CO2 detector delivered before July 2015

CTX 300 CO_2 linearization card

- If you use a linearization card, the connection is the following.

Terminal A	Central terminal number
2 (GND)	1
3 (+24V)	3
1 (I out)	2

Terminal B	Central terminal number
In	Iout
GND	GND
+24V	+24V

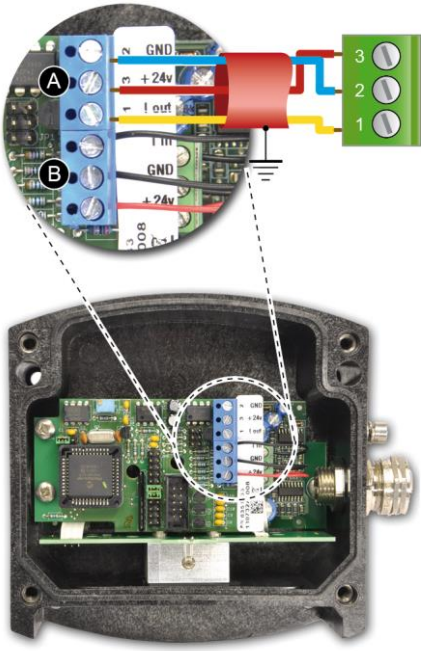
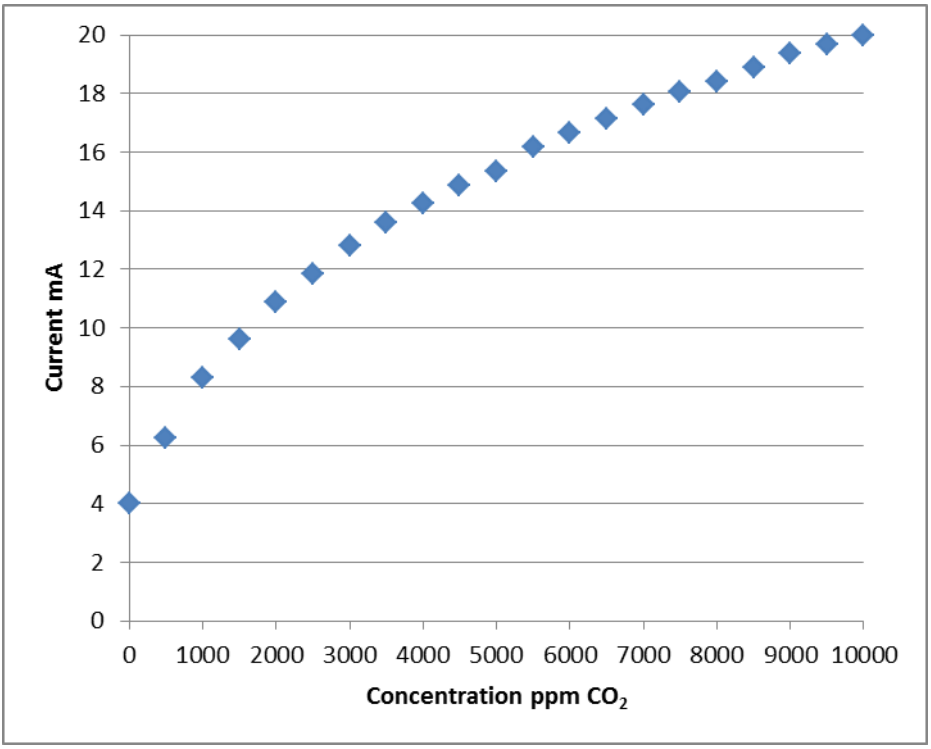


Figure 36

Calibration curves

The following pages present the calibration curves, that means the output signal of different CO_2-IR transmitters.

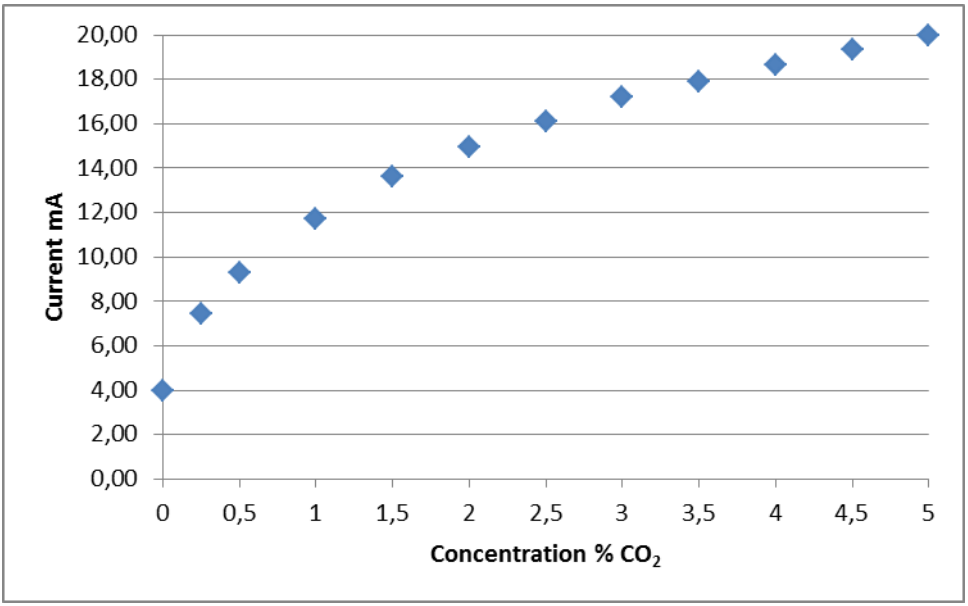
- CO_2 sensor, 0-1 % scale.
- CO_2 sensor, 0-5 % scale.
- CO_2 sensor, 0-10 % scale.
- CO_2 sensor, 0-50 % scale.



ppm CO_2	Display % range	Current mA
0	0	4
500	14	6.24
1000	27	8.32
1500	35	9.6
2000	43	10.88
2500	49	11.84
3000	55	12.8
3500	60	13.6
4000	64	14.24
4500	68	14.88
5000	71	15.36

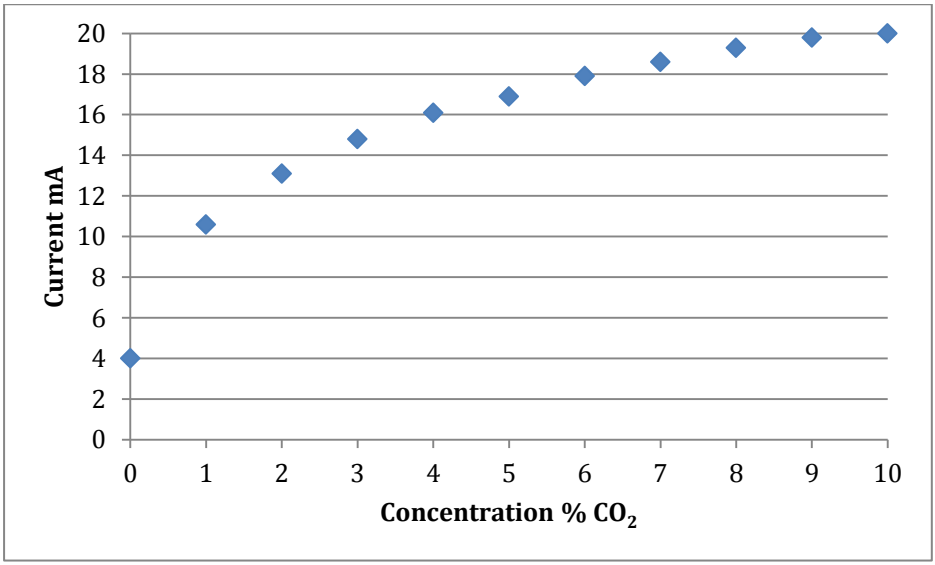
ppm CO_2	Display % range	Current mA
5500	76	16.16
6000	79	16.64
6500	82	17.12
7000	85	17.6
7500	88	18.08
8000	90	18.4
8500	93	18.88
9000	96	19.36
9500	98	19.68
10000	100	20

Figure 37: signal CO_2-IR transmitter output signal – 0-1 % scale.



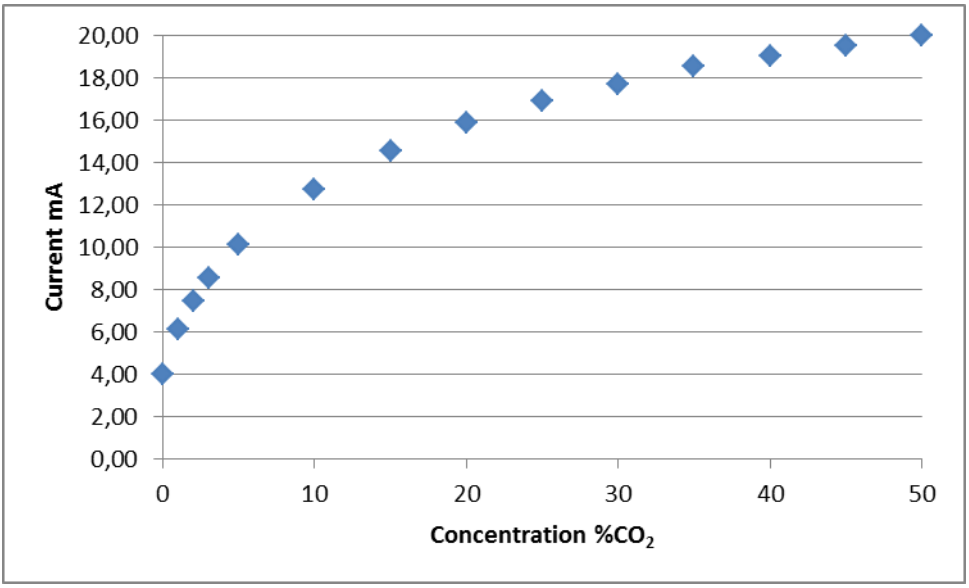
% CO_2	Display % range	Current mA
0,00	0	4,0
0,25	21.6	7.46
0,50	33.1	9.3
1,00	48.4	11.74
1,50	60.1	13.62
2,00	68.6	14.98
2,50	75.6	16.1
3,00	82.4	17.18
3,50	86.7	17.87
4,00	91.7	18.67
4,50	95.8	19.33
5,00	100	20

Figure 38: signal CO_2-IR transmitter output signal – 0-5 % scale.



% CO_2	Display % range	Current mA
0,00	0	4,0
1,00	41.25	10,6
2,00	56.875	13,1
3,00	67.5	14,8
4,00	75.625	16,1
5,00	80.625	16,9
6,00	86.875	17,9
7,00	91.25	18,6
8,00	95.625	19,3
9,00	98.75	19,8
10,00	100	20,0

Figure 39 : signal CO_2-IR transmitter output signal – 0-10 % scale.



% CO_2	Display % range	Current mA
0	0	4,0
1	13.4	6.14
2	21.6	7.46
3	28.4	8.54
5	38.1	10.1
10	54.6	12.74
15	66	14.87

% CO_2	Display % range	Current mA
20	74.2	15.87
25	80.4	16.86
30	85.6	17.7
35	90.7	18.51
40	93.8	19.01
45	96.9	19.5
50	100	20

Figure 40 : signal CO_2-IR transmitter output signal – 0-50 % scale.

Replacing a sensor

Sensors must be replaced:

- When calibration is no longer possible (no sensitivity);
- During preventative maintenance.

The replacement sensor should be identical to the original sensor (same gas, same range). After a sensor has been replaced, a calibration or test (for pre-calibrated sensors) must be conducted.

Disposal

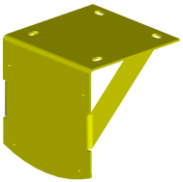
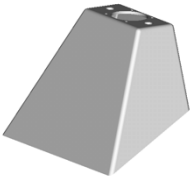
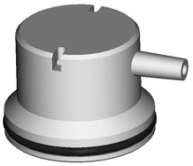
For the preservation, protection and improvement of environmental quality, and for the protection of human health and the prudent and rational utilization of natural resources, the *CTX 300* must be disposed of separately from electronic equipment and cannot be disposed of with normal household waste. The user therefore has an obligation to separate the *CTX 300* sensor from other waste to ensure that it is recycled safely for the environment. For further details on existing collection sites, contact the local administration or seller of the product.

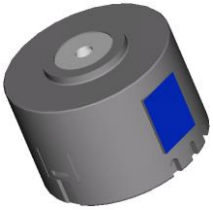
Chapter 6 | Spare parts

List of spare parts for different detectors.

Replacement parts must imperatively be guaranteed origin *Oldham*. Otherwise, material safety could be jeopardized.

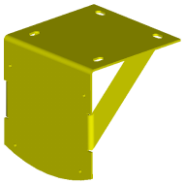
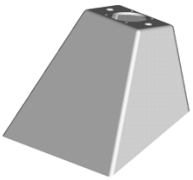
CTX/COX 300 toxic or oxygen sensors

P/N	Description	Picture
6147868	CTX 300 tool kit.	
6322420	Mounting brace and bolts (*CTX 300*) ceiling mount.	
6323607	Gas collector (s).	
6331137	Gas introduction device for O_2, C0, H_2S, NO, H_2.	
6331141	Gas introduction device for explosible gases and other toxic gases.	

P/N	Description	Picture
6327906	Device for remote gas introduction.	
6335953	Replacement filter. PTFE protector filter.	
	Pre-calibrated oxygen sensor pack	
6313C2A	CTX 300 O_2, 0-30 % vol sensor pack. (2years)	
6313C5A	CTX 300 O_2, 0-30 % vol sensor pack. (5years)	
6313660	CTX 300 O_2, 0-100 % vol sensor pack.	
	Pre-calibrated toxic sensor pack	
6313627	CTX 300 CO - 100 ppm sensor pack.	
6313628	CTX 300 CO - 300 ppm sensor pack.	
6313629	CTX 300 CO - 1000 ppm sensor pack.	
6313631	CTX 300 CO - 1% vol sensor pack.	
6313632	CTX 300 CO - 10% vol sensor pack.	
6313633	CTX 300 H_2S - 30 ppm sensor pack.	
6313634	CTX 300 H_2S - 100 ppm sensor pack.	
6313635	CTX 300 H_2S - 1000 ppm sensor pack.	
6313636	CTX 300 NO - 100 ppm sensor pack.	
6313637	CTX 300 NO - 300 ppm sensor pack.	
6313638	CTX 300 NO - 1000 ppm sensor pack.	
6313639	CTX 300 NO_2 - 10 ppm sensor pack.	
6313640	CTX 300 NO_2 - 30 ppm sensor pack.	
6314001	CTX 300 NO_2 - 100 ppm sensor pack.	
6313645	CTX 300 ETO - 30 ppm sensor pack.	
6313646	CTX 300 SO_2 - 10 ppm sensor pack.	
6313647	CTX 300 SO_2 - 30 ppm sensor pack.	
6313648	CTX 300 SO_2 - 100 ppm sensor pack.	

P/N	Description	Picture
6313649	CTX 300 Cl_2 - 10 ppm sensor pack.	
6313650	CTX 300 H_2 - 30 ppm sensor pack.	
6313651	CTX 300 H_2 - 100 ppm sensor pack.	
6313652	CTX 300 HCL - 30 ppm sensor pack.	
6313653	CTX 300 HCL - 100 ppm sensor pack.	
6313654	CTX 300 HCN - 10 ppm sensor pack.	
6313655	CTX 300 HCN - 30 ppm sensor pack.	
6313656	CTX 300 NH_3 - 100 ppm sensor pack.	
6313657	CTX 300 NH_3 - 1000 ppm sensor pack.	
6313893	CTX 300 NH_3 - 0-5000 ppm sensor pack.	
6313675	CTX 300 HF - 10 ppm sensor pack.	
6313676	CTX 300 O_3 - 1 ppm sensor pack.	
6313677	CTX 300 PH_3 - 1 ppm sensor pack.	
6313919	CTX 300 PH_3 - 1000 ppm sensor pack.	
6313860	CTX 300 F_2 - 1 ppm sensor pack.	
6314183	CTX 300 CH_2O - 50 ppm sensor pack.	
6 314 185	CTX 300 ASH_3 - 1 ppm sensor pack.	
6313834	CTX 300 SIH_4 - 50 ppm sensor pack.	
6313678	CTX 300 ClO_2 - 3 ppm sensor pack.	
6313833	CTX 300 $COCl_2$ - 3 ppm sensor pack.	
	Replacement parts	
6323608	Cover without display.	
6323609	Cover with display.	
6815919	CTX 300 without display label.	
6815921	CTX 300 wit display label.	
6451466	Display card.	
6815923	*Localization* sticker.	
6451465	Motherboard.	

CSC 300 semiconductor sensors

P/N	Description	Picture
6147868	CTX 300 tool kit.	
6322420	Mounting brace and bolts (CTX 300 ceiling mount).	
6323607	Gas collector (stainless).	
6335919	Calibration kit (humidifier filter + pipe).	
6335918	Humidifier filter.	
	Replacement sensors	
6313544	Sensor for R134A, R11, R23, R143A, R404A, R507, R410A, R32, R407C, R408A.	
6313545	Sensor for methyl chloride, methylene chloride.	
6313546	Sensor for solvents.	
6313547	Sensor for R22, R12.	
6313464	Sensor for VOC.	
	Replacement parts	
6451396	Motherboard.	
6143502	PG9 cable gland.	

CTX 300 – CO_2 sensors[1]

P/N	Description	Picture
6147868	CTX 300 tool kit.	
6451618	Motherboard.	
6351233	Linearization card.	
6799188	Gas introduction device.	
	Replacement sensors	
6451612	CO_2 - 0 - 1 % sensor.	
6451611	CO_2 - 0-5 % or 0-10 % sensor.	
6451610	CO_2 - 0 - 50 % sensor.	
	Replacement parts	
6815923	*Localization* sticker.	
6851919	Self-adhesive front panel.	
6143502	PG9 cable gland.	

[1] CTX 300 CO2 detector delivered before July 2015

Chapter 7 | Certification

The following page reproduces the EC declaration of conformity.

DECLARATION DE CONFORMITE CONSTRUCTEUR
Manufacturer Declaration of Conformity

CE

La **Société Oldham S.A.S.**, 62000 Arras France, atteste que les
The Company **Oldham S.A.S.**, *62000 Arras France, declares that the*

Détecteurs de gaz CTX 300
Gas Detectors CTX 300

sont conformes aux exigences des Directives Européennes suivantes :
comply with the requirements of the following European Directives :

1) Directive Européenne CEM 2004/108/CE du 15/12/04 : **Compatibilité Electromagnétique**
The European Directive EMC 2004/108/CEE of 15/12/04: ELECTROMAGNETIC COMPATIBILITY

Normes harmonisées appliquées : **EN 50270**:06 for type 1
Harmonised applied Standards

CEM-Appareils de détection de gaz
EMC-Apparatus for the detection of gases

Arras, le 19/12/2013

Michel Spellemaeker

Global Director of Product Management

ISO 9001:2008 CERTIFIE
ISO 14001:2004 CERTIFIE
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www.oldhamgas.com

CE_CTX 300_ced b

DECLARATION DE CONFORMITE CONSTRUCTEUR

CE

The company Oldham S.A.S., ZI Est, 62000 Arras France, declares that following materials intended for halogenated refrigerant fluid detection,

Gas detectors OLCT 10 & CTX 300

comply with the requirements of the European standard EN 14624 :

Performances of portable leak detectors or atmosphere controllers of halogenated refrigerant fluids.

Technical specifications

Equipment category :	Non selective atmospheric controllers
Measuring range :	0-2000 ppm R134a
Minimum sensitivity threshold :	10 ppm R134a
Maximum sensitivity threshold :	5000 ppm R134a during 90s without loss of sensitivity
Minimum alarm threshold :	200 ppm R134a
Minimum time to detect the lowest concentration :	less than 25s after injection of 500 ppm R134a
Recovery time :	less than 160s after injection of 1000 ppm R134a during 8 minutes

Note 1 : For more information about installation, commissioning or safe practices please refer to the user manual of the manufacturer.

Note 2 : Local regulation may apply. For France, please refer to articles R.543-75 to R.543-123 in section 6 of the French Environmental Code (decree #2007-1467 dated from October 12, 2007 and decree #2011-396 dated from 2011, April 13).

Arras, 21/10/2013

Michel Spellemaeker

Global Director of Product Management

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EN 14624_OLCT 10_ed_b

Chapter 8 Technical specifications

Enclosure.	Polycarbonate housing.
Function.	Detector-transmitter
Display	Highly visible backlight display unit (optional, gas dependent)
Indicator lights	In operation: green color (on CTX 300 : 3-wire) Failure / maintenance: yellow color
Link	2 wires – CTX 300 without display unit 3 wires – CTX 300 with display unit
Cable entry	PG9 cable gland (outer diameter 6 to 11 mm)
Power supply	15 to 32 V DC
Power consumption	CTX 300 without display unit: 27 mA CTX 300 with display unit: 110 mA Infrared or semiconductor versions: 100mA
Operating temperature	-40°C to + 50°C, 40°F to + 122°F sensor dependent
Sealing	IP 54, NEMA 3 & 3R
Weight	520 g
Dimensions	130 x 136 x 69 (l x h x d) in mm ; (5.12" x 5.35" x 2.72")
Certification	C US CCSA – Class 4812 10 – Signal Appliances-Detectors CSAUS – Class 4812 86 - Signal Appliances-Miscellaneous
EMC	Type 1 according to EN 50270:06
Impedance	32 ohms max loop for CTX 300 with display unit and for solid states and CO_2 sensor versions
	128 ohms max loop for CTX 300 without display unit

Gas	Type of sensor	Range (ppm)	Operating temperature	Relative humidity uncondensed	Accuracy (at PA full scale)	Life span (in month)	T(50) (seconds)
		30.0%	-20°C to +50°C	10% to 95% RH	+/-1.5%	28	10
O2	EC	30.0%	-40°C to +50°C	10% à 95% RH	+/-1.5%	60	10
		100%	+5°C to +40°C	10% to 95% RH	+/-1.5%	36	<20
		100	-20°C to +50°C	10% to 95% RH	+/-1.5%	48	15
		300	-20°C to +50°C	10% to 95% RH	+/-1.5%	48	15
CO	EC	1000	-20°C to +50°C	10% to 95% RH	+/-1.5%	48	15
		1.00%	-20°C to +50°C	10% to 95% RH	+/-1.5%	48	<20
		10.0%	-20°C to +50°C	10% to 95% RH	+/-1.5%	48	<20
		1%	-30°C to +45°C	5% to 95% RH	+/-2%	60	70(T90)
CO_2	IR	5%	-30°C to +45°C	5% to 95% RH	+/-2%	60	70(T90)
		10%	-30°C to +45°C	5% to 95% RH	+/-2%	60	70(T90)
		50%	-30°C, to +45°C	5% to 95% RH	+/-2%	60	70(T90)
		30.0	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
H_2S	EC	100	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
		1000	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
		100	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
NO	EC	300	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
		1000	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
NO_2	EC	10.0	-20°C to +50°C	10% to 95% RH	+/-1.5%	24	20
		30.0	-20°C to +50°C	10% to 95% RH	+/-1.5%	24	20
		10.0	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
SO_2	EC	30.0	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
		100	-20°C to +50°C	10% to 95% RH	+/-1.5%	36	15
Cl_2	EC	10.0	-20°C to +50°C	10% to 95% RH	+/-1.5%	24	50
H_2	EC	2000	-20°C to +50°C	10% to 95% RH	+/-1.5%	24	50
		2.0%	-20°C to +50°C	10% to 95% RH	+/-1.5%	24	50
HCl	EC	30.0	-20°C to +50°C	10% to 95% RH	+/-1.5%	18	50
		100	-20°C to +50°C	10% to 95% RH	+/-1.5%	18	50
HCN	EC	10.0	-20°C to +50°C	10% to 95% RH	+/-2%	24	30
		30.0	-20°C to +50°C	10% to 95% RH	+/-2%	24	30
		100	-20°C to +40°C	10% to 95% RH	+/-3%	24	<20
NH_3	EC	100	-40°C to +40°C	10% to 95% RH	+/-3%	24	<20
		1000	-20°C to +40°C	10% to 95% RH	+/-3%	24	<20
		5000	-20°C to +40°C	10% to 95% RH	+/-3%	24	<20
ETO	EC	30.0	-20°C to +50°C	10% to 95% RH	+/-3%	36	50
HF	EC	10.0	-10°C to +30°C	10% to 95% RH	+/-3%	12	50
O_3	EC	1.00	-20°C to +50°C	10% to 95% RH	+/-3%	18	40

Gas	Type of sensor	Range (ppm)	Operating temperature	Relative humidity uncondensed	Accuracy (at PA full scale)	Life span (in month)	T(50) (seconds)
PH_3	EC	1.00	-20°C to +50°C	10% to 95% RH	+/-3%	12	40
ASH_3	EC	1.00	-20°C to +50°C	10% to 95% RH	+/-3%	12	40
ClO_2	EC	3.00	-20°C to +50°C	10% to 95% RH	+/-2%	24	50
$COCl_2$	EC	3.00	-20°C to +40°C	10% to 95% RH	+/-1.5%	18	50
Methylene chloride	SC	500	-20°C to +55°C	10% to 95% RH	+/-15% relative to alarm threshold	36	40
Methyl chloride	SC	500	-20°C to +60°C	10% to 95% RH		36	40
Toluene	SC	500	-20°C to +50°C	10% to 95% RH		36	20
		2000	-20°C to +50°C	10% to 95% RH		36	20
Trichloroethylene	SC	500	-20°C to +60°C	10% to 95% RH		36	40
Xylene	SC	500	-20°C to +50°C	10% to 95% RH		36	20
		2000	-20°C to +50°C	10% to 95% RH		36	20
Ethanol	SC	500	-20°C to +50°C	10% to 95% RH		36	20
		5000	-20°C to +60°C	10% to 95% RH		36	20
R12	SC	10000	-20°C to +55°C	10% to 95% RH		36	30
R22	SC	2000	-20°C to +55°C	10% to 95% RH		36	30
R123	SC	2000	-20°C to +55°C	10% to 95% RH		36	30
R134a	SC	2000	-20°C to +55°C	10% to 95% RH		36	30
R11	SC	10000	-20°C to +55°C	10% to 95% RH		36	30
R23	SC	10000	-20°C to +55°C	10% to 95% RH		36	30
R143a	SC	2000	-20°C to +55°C	10% to 95% RH		36	30
R404a	SC	2000	-20°C to +55°C	10% to 95% RH		36	30
R507	SC	2000	-20°C to +55°C	10% to 95% RH		36	30
R410a	SC	1000	-20°C to +55°C	10% to 95% RH		36	20
R32	SC	1000	-20°C to +55°C	10% to 95% RH		36	20

EC : Electrochemical
IR : Infrared
SC : Semiconductor

Chapter 9 | Annex

Indications for calibrating the *CTX 300 SC*

This information relates to the *CTX 300* semiconductor.

P/N	Gas types	Measurement range	After sale service standard gas	Test gas
6313545	Methane CH_4	100% LEL	20 % LEL 1 % CH_4	
	Hydrogen H_2	100% LEL	20 % LEL 0.8 % H_2	
	Butane C_4H_{10}	100% LEL	20 % LIE LEL 0.37 % C_4H_{10}	
	Propane C_3H_8	100% LEL	20 % LEL 0.4 % C_3H_8	
	Methyl Chloride CH_3Cl	500 ppm	50 ppm CH_3Cl	2000 ppm H_2 = 190 ppm ± 25ppm
	Methylene chloride CH_2Cl_2	500 ppm	100 ppm CH_2CL_2	100 ppm CO = 80ppm ± 15 ppm
6313546	Trichloroethylene C_2HCl_3	500 ppm	75 ppm Trichloroethylene	300 ppm CO = 120 ppm ± 35ppm
	Toluene $C_6H_5CH_3$	2 000 ppm	100 ppm Toluene	300 ppm CO = 330ppm ± 50ppm
	Xylene C_6H_4 $(CH_3)2$	2 000 ppm	100 ppm Xylene	300 ppm CO = 330ppm ± 50ppm
	Ethanol C_2H_5OH	5 000 ppm	1000 ppm Ethanol	1000ppm H_2 = 880ppm ± 150ppm
6313547	Freon R12	1 % volume	1000 ppm R12	0.5%CH4=overscale
	Freon R22	2000 ppm	1000 ppm R22	0.5% CH4 = 750ppm ± 200ppm
6313544	Freon R134A	2000 ppm	1000 ppm R134A	0.5% CH4 = 2000ppm ± 500ppm
	Freon R11	1% volume	1000 ppm R134A = 150 ppm	0.5% CH4=overscale
	Freon R23	1% volume	1000 ppm R22 = 4500ppm	0.5% CH4 = 2800ppm ±800ppm

CTX 300 overview

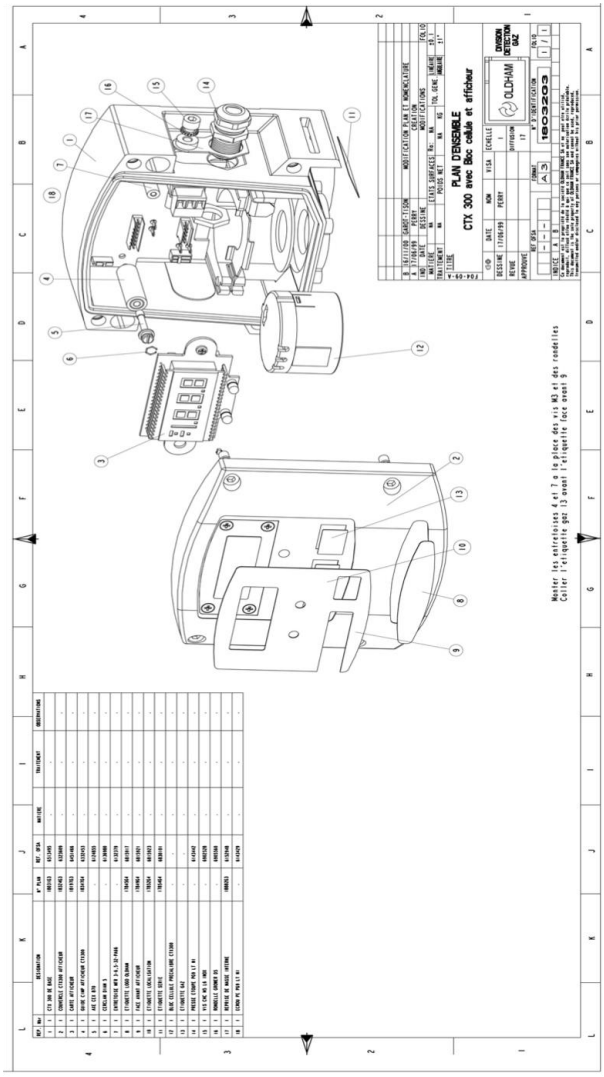

Figure 41: *CTX 300* with sensor pack and display – overview.

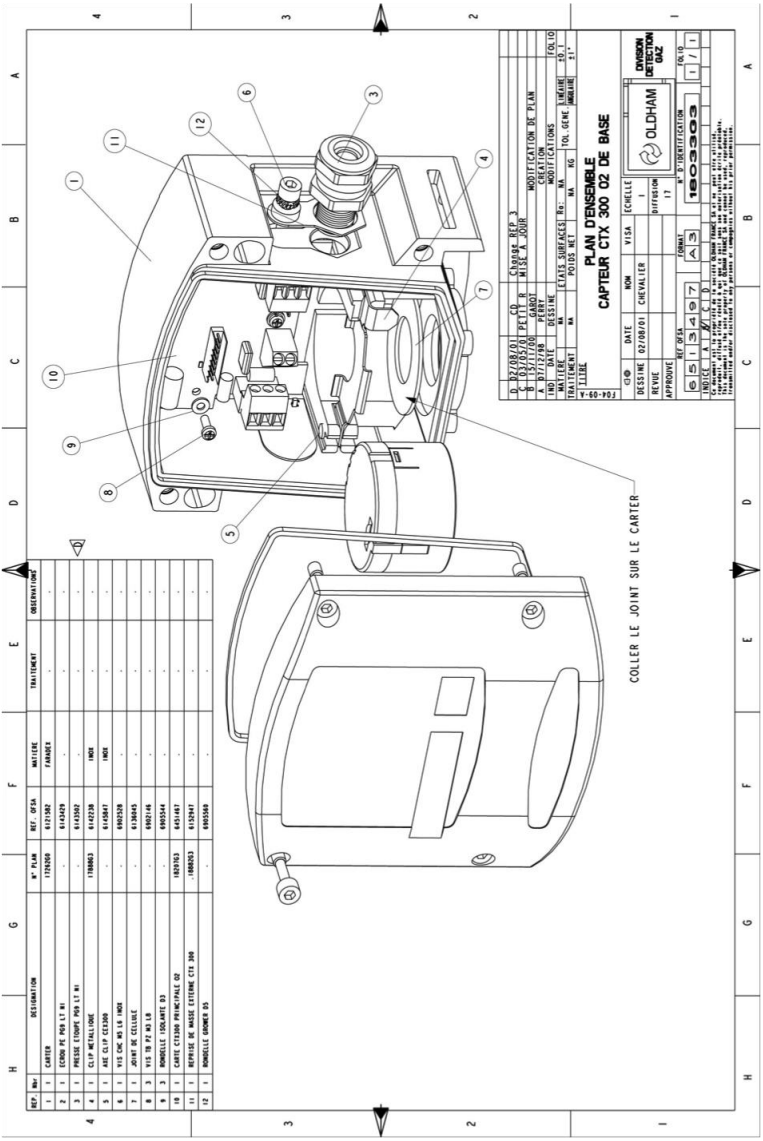

Figure 42: *CTX 300* – overview.

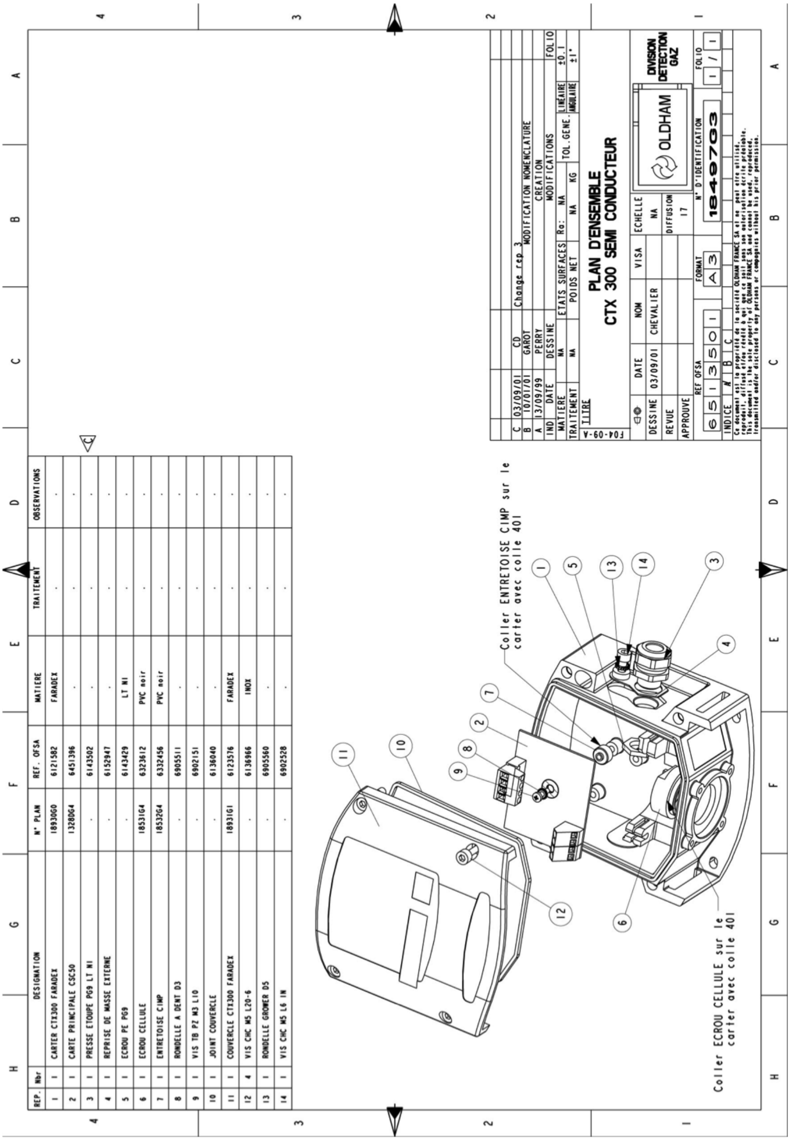

Figure 43: *CTX 300* semiconductor– overview.

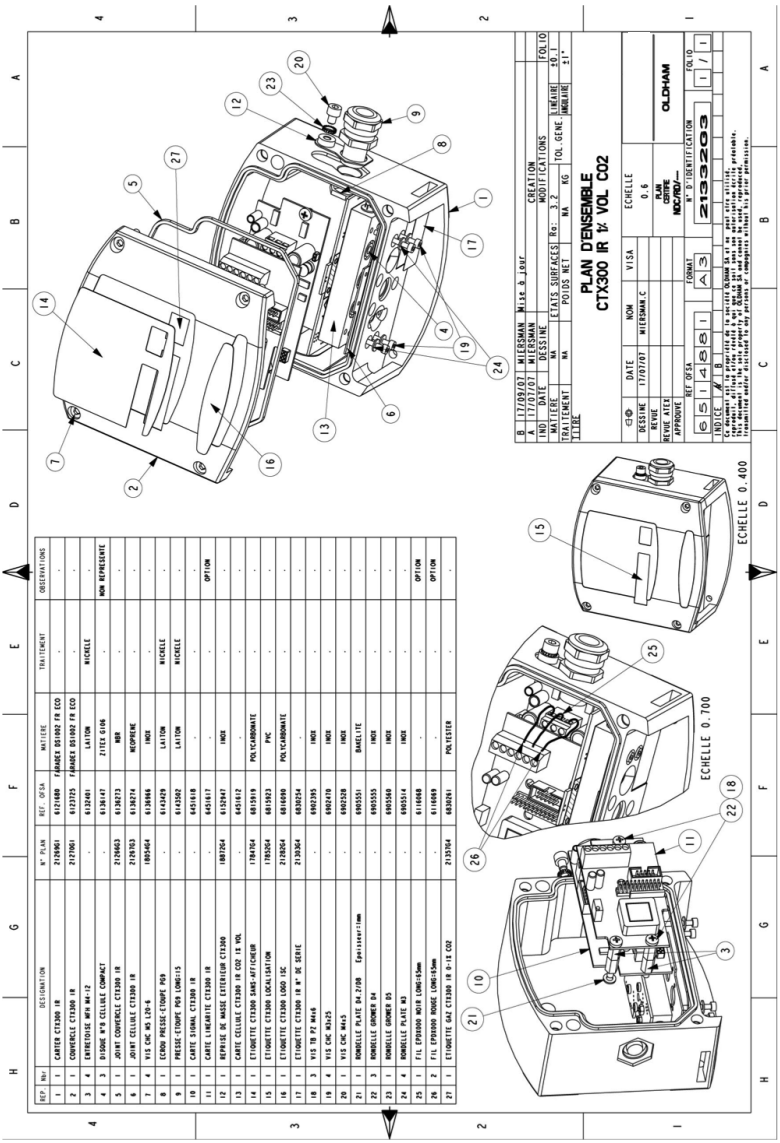

Figure 44: *CTX 300* infrared – 1% volume CO_2 – overview.

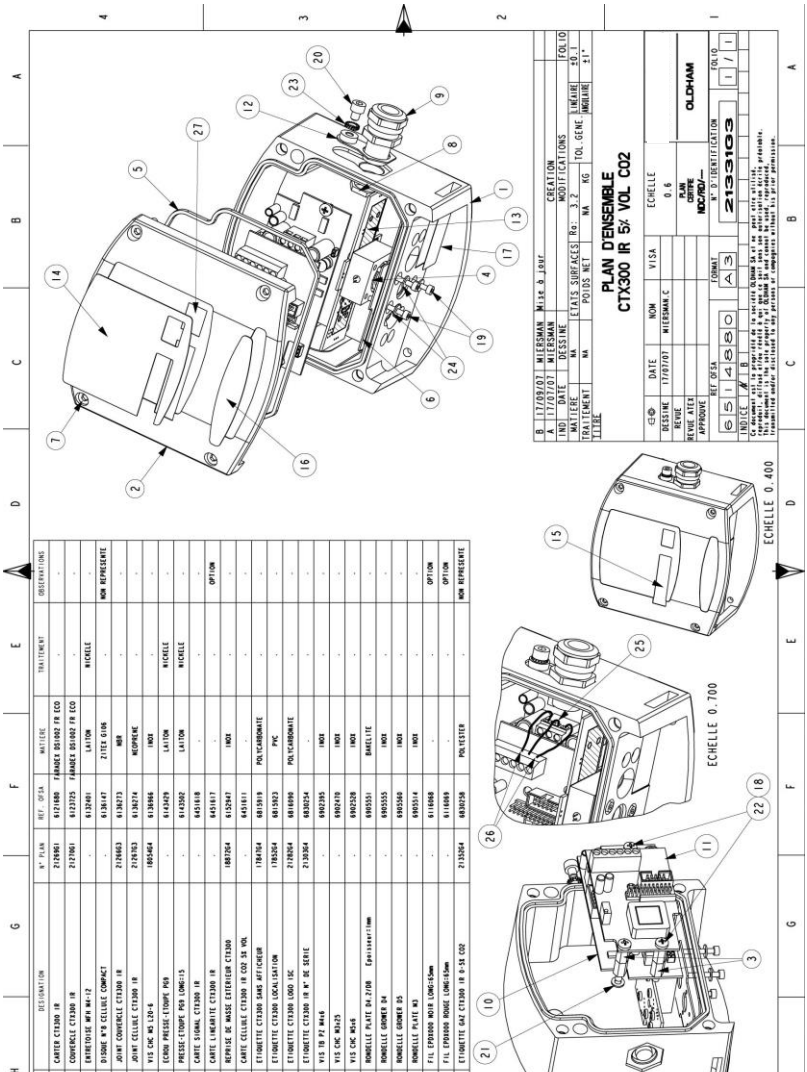

Figure 45: *CTX 300* infrared – 5% volume CO_2 – overview.

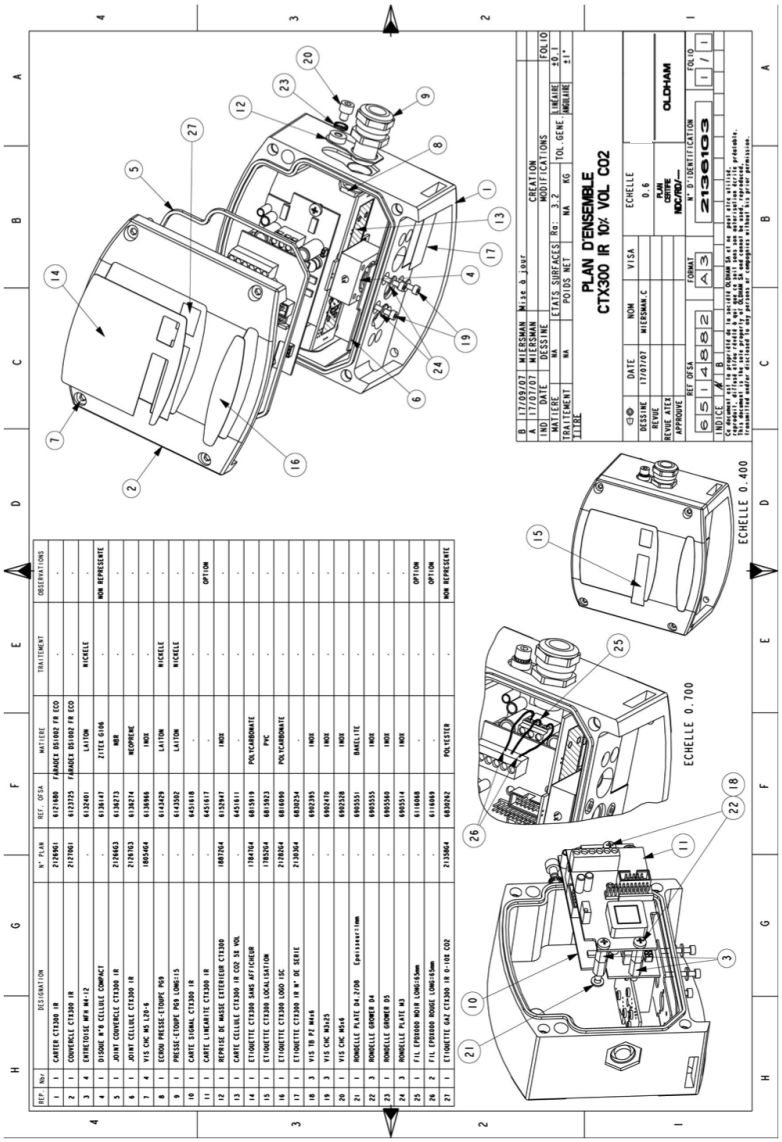

Figure 46: *CTX 300* infrared – 10% volume CO_2 – overview.

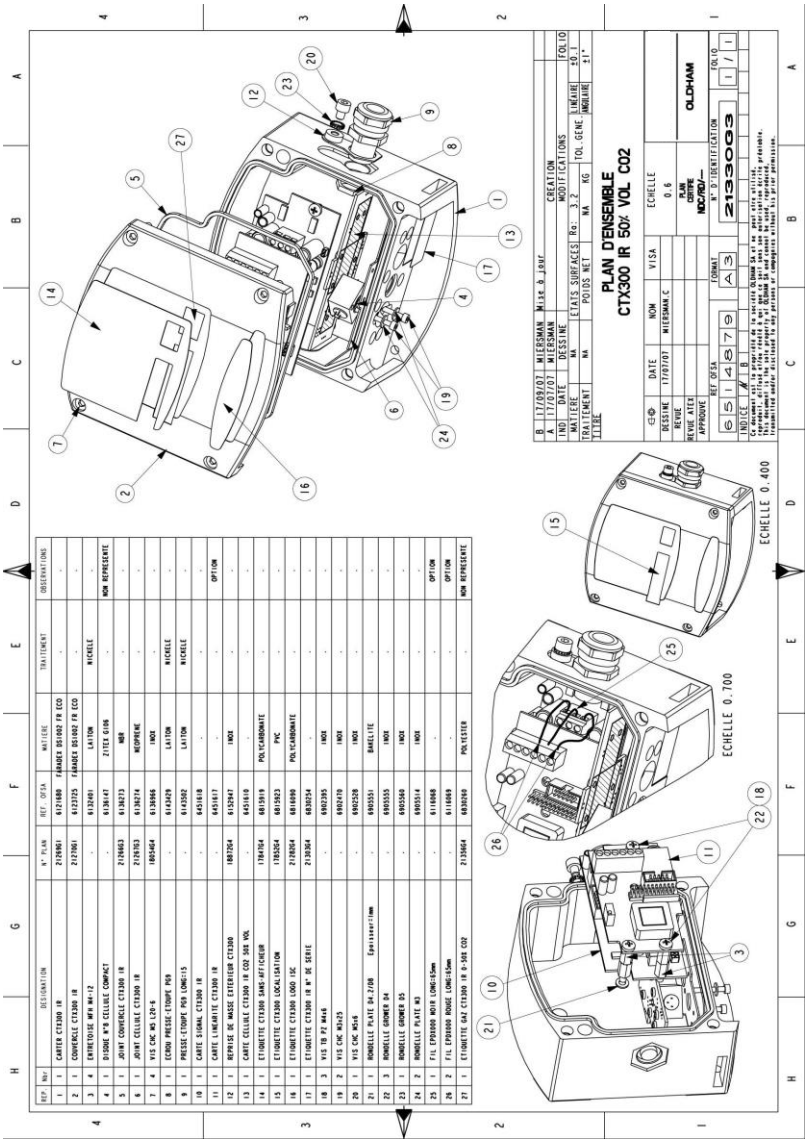

Figure 47: *CTX 300* infrared – 50% volume CO_2 – overview.

EUROPEAN PLANT AND OFFICES

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